

The rotary motion of the shaft is converted into linear motion by the three bearings 26, 27 and 28 that are fixed within the carriage. The three bearings are configured such as to provide clearance between each bearing and the shaft. The two outer bearings 26, 28 are fixed at the same angle relative to the longitudinal axis of the shaft and the middle bearing 27 is fixed at an equal and opposite angle with respect to the shaft, resulting in the outer bearings running on their corresponding edges with respect to the shaft with the middle bearing running on its opposing edge. This causes the bearings to "roll" along the length of the shaft thereby converting the rotary input R provided by the motor-driven shaft into a linear output T (see FIG. 6). Thus, this arrangement enables the controlled feed of the carriage, and thus the actuator, in one direction only, by means of the rotary motion of the shaft. The actuator engages with the plunger of the syringe thereby enabling controlled discharge of fluid within the syringe.